K.Kerr

Re-RUN

1600

RAW SEQUENCE LISTING   DATE: 02/11/2003
PATENT APPLICATION: US/09/710,262E   TIME: 14:54:54

Input Set : A:\ROSENBG.txt
Output Set: N:\CRF4\02112003\I710262E.raw

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   3 <110> APPLICANT: Rosenberg, Eugene
   4         Ron, Eliora
   5         Orr, Elisha
   6         Paitan, Yossi
   8 <120> TITLE OF INVENTION: GENE CLUSTER
  10 <130> FILE REFERENCE: 2290.00076
C-->  12 <140> CURRENT APPLICATION NUMBER: US/09/710,262E
  13 <141> CURRENT FILING DATE: 1999-01-29
  15 <160> NUMBER OF SEQ ID NOS: 20
  17 <170> SOFTWARE: PatentIn Ver. 2.1
  19 <210> SEQ ID NO: 1
  20 <211> LENGTH: 2392
  21 <212> TYPE: PRT
  22 <213> ORGANISM: Myxococcus xanthus
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  28 Tyr Pro Leu Leu Ala Gly Ala Ile Arg Val Glu Gly Thr Glu Pro Val
  29              20                  25                  30
  31 Ile Val Pro Ser Gly Gln Val Ser Ala Glu Val His Glu Val Pro Ser
  32          35                  40                  45
  34 Val Ser Asp Ser Ala Leu Val Ala Thr Leu Arg Ala Ser Ala Lys Val
  35      50                  55                  60
  37 Pro Phe Asp Leu Ala Cys Gly Pro Leu Ala Arg Leu His Leu Tyr Ser
  38  65                  70                  75                  80
  40 Arg Ser Glu His Glu His Val Leu Leu Leu Cys Phe His His Leu Val
  41              85                  90                  95
  43 Leu Asp Gly Ala Ser Val Ala Pro Leu Leu Asp Ala Leu Arg Glu Arg
  44              100                 105                 110
  46 Tyr Ala Gly Thr Glu Ala Lys Ala Gly Leu Leu Glu Val Pro Ile Val
  47              115                 120                 125
  49 Ala Pro Tyr Arg Ala Ala Val Glu Trp Glu Gln Leu Ala Ile Gly Gly
  50      130                 135                 140
  52 Asp Glu Gly Arg Arg His Leu Asp Tyr Trp Arg His Val Leu Ala Thr
  53 145                 150                 155                 160
  55 Pro Val Pro Pro Pro Leu Asn Leu Pro Thr Asp Arg Pro Arg Ser Ala
  56              165                 170                 175
  58 Thr Gly Leu Asp Ser Glu Gly Ala Thr His Ser Gln Arg Val Pro Thr
  59              180                 185                 190
  61 Glu Gln Ala Leu Arg Leu Arg Glu Phe Ala Arg Ala Gln Gln Val Ser
  62          195                 200                 205
  64 Leu Pro Thr Val Leu Leu Gly Leu Tyr Tyr Ala Leu Leu His Arg His
  65      210                 215                 220
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```
67  Thr Arg Gln Asp Asp Val Val Val Gly Ile Pro Thr Met Gly Arg Pro
68  225             230             235                     240
70  Arg Ala Glu Leu Ala Thr Ala Ile Gly Tyr Phe Val Asn Val Met Ala
71              245             250                     255
73  Val Arg Ala Arg Gly Leu Gly Gln His Ser Phe Gly Ser Leu Leu Arg
74              260             265                     270
76  His Leu His Asp Ser Val Ile Asp Gly Leu Glu His Ala His Tyr Pro
77          275             280                 285
79  Phe Pro Arg Val Val Lys Asp Leu Arg Leu Ser Asn Gly Pro Glu Glu
80      290             295                 300
82  Ala Pro Gly Phe Gln Thr Met Phe Thr Phe Gln Ser Leu Gln Leu Thr
83  305             310             315                     320
85  Ser Ala Pro Pro Arg Pro Glu Pro Arg Ser Gly Gly Leu Pro Glu Leu
86              325             330                 335
88  Glu Pro Leu Asp Cys Val His Gln Glu Gly Ala Tyr Pro Leu Glu Leu
89              340             345                 350
91  Glu Val Val Glu Gly Ala Lys Gly Leu Thr Leu His Phe Lys Tyr Asp
92          355             360                 365
94  Ala Arg Leu Tyr Glu Ala Asp Thr Val Glu Arg Met Ala Arg Gln Leu
95      370             375                 380
97  Leu Arg Ala Ala Asp Gln Val Ala Asp Gly Val Glu Ser Pro Leu Ser
98  385             390             395                     400
100 Ala Leu Ser Trp Leu Asp Asp Glu Glu Arg Arg Thr Leu Leu Arg Asp
101             405             410                     415
103 Trp Asn Ala Thr Ala Thr Pro Phe Leu Glu Asp Leu Gly Val His Glu
104             420             425                 430
106 Leu Phe Gln Arg Gln Ala Arg Glu Thr Pro Asp Ala Met Ala Val Ser
107         435             440                 445
109 Tyr Glu Gly His Ser Leu Ser Tyr Gln Ala Leu Asp Thr Arg Ser Arg
110     450             455                 460
112 Glu Ile Ala Ala His Leu Lys Ser Phe Gly Val Lys Pro Gly Ala Leu
113 465             470             475                     480
115 Val Gly Ile Tyr Leu Asp Arg Ser Ala Glu Leu Val Ala Ala Met Leu
116             485             490                 495
118 Gly Val Leu Ser Ala Gly Ala Ala Tyr Val Pro Leu Asp Pro Val His
119             500             505                 510
121 Pro Glu Asp Arg Leu Arg Tyr Met Leu Glu Asp Ser Gly Val Val Val
122         515             520                 525
124 Val Leu Ala Arg Gln Ala Ser Arg Asp Lys Val Ala Ala Ile Ala Gly
125     530             535                 540
127 Ala Ser Cys Lys Val Cys Val Leu Glu Asp Val Lys Ala Gly Ala Thr
128 545             550             555                     560
130 Ser Ala Pro Ala Gly Thr Ser Pro Asn Gly Leu Ala Tyr Val Ile Tyr
131             565             570                 575
133 Thr Ser Gly Ser Thr Gly Arg Pro Lys Gly Val Met Ile Pro His Arg
134             580             585                 590
136 Gly Val Val Asn Phe Leu Leu Cys Met Arg Arg Thr Leu Gly Leu Lys
137             595             600                 605
139 Arg Thr Asp Ser Leu Leu Ala Val Thr Thr Tyr Cys Phe Asp Ile Ala
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```
140      610                    615                    620
142 Ala Leu Glu Leu Leu Leu Pro Leu Cys Ala Gly Ala Gln Val Ile Ile
143 625                    630                    635                    640
145 Ala Ser Ala Glu Thr Val Arg Asp Ala Gln Ala Leu Lys Arg Ala Leu
146                    645                    650                    655
148 Arg Thr His Arg Pro Thr Leu Met Gln Ala Thr Pro Ala Thr Trp Thr
149                    660                    665                    670
151 Leu Leu Phe Gln Ser Gly Trp Glu Asn Ala Glu Arg Val Arg Ile Leu
152          675                    680                    685
154 Cys Gly Gly Glu Ala Leu Pro Glu Ser Leu Lys Ala His Phe Val Arg
155          690                    695                    700
157 Thr Ala Ser Asp Val Trp Asn Met Phe Gly Pro Thr Glu Thr Thr Ile
158 705                    710                    715                    720
160 Trp Ser Thr Met Ala Lys Val Ser Ala Ser Arg Pro Val Thr Ile Gly
161                    725                    730                    735
163 Lys Pro Ile Asp Asn Thr Gln Val Tyr Val Leu Asp Asp Arg Met Gln
164                    740                    745                    750
166 Pro Val Pro Ile Gly Val Pro Gly Glu Leu Trp Ile Ala Gly Ala Gly
167          755                    760                    765
169 Val Ala Cys Gly Tyr Leu Asn Arg Pro Ala Leu Thr Ala Glu Arg Phe
170          770                    775                    780
172 Val Ser Asn Pro Phe Thr Pro Gly Thr Thr Leu Tyr Arg Thr Gly Asp
173 785                    790                    795                    800
175 Leu Ala Arg Trp Arg Ala Asp Gly Glu Val Glu Tyr Leu Gly Arg Leu
176                    805                    810                    815
178 Asp His Gln Val Lys Val Arg Gly Phe Arg Ile Glu Met Gly Glu Ile
179                    820                    825                    830
181 Glu Ala Gln Leu Ala Gly His Pro Ser Val Lys Asn Cys Ala Val Val
182          835                    840                    845
184 Ala Lys Glu Leu Asn Gly Thr Ser Gln Leu Val Ala Tyr Cys Gln Pro
185          850                    855                    860
187 Ala Gly Thr Ser Phe Asp Glu Glu Ala Ile Arg Ala His Leu Arg Lys
188 865                    870                    875                    880
190 Phe Leu Pro Asp Tyr Met Val Pro Ala His Val Phe Ala Val Asp Ala
191                    885                    890                    895
193 Ile Pro Leu Ser Gly Asn Gly Lys Val Asp Arg Gly Gln Leu Met Ala
194          900                    905                    910
196 Arg Pro Val Val Thr Arg Arg Lys Thr Ser Ala Val His Ala Arg Ser
197          915                    920                    925
199 Pro Val Glu Ala Thr Leu Val Glu Leu Trp Lys Asn Val Leu Gln Val
200          930                    935                    940
202 Asn Glu Val Gly Val Glu Asp Arg Phe Phe Glu Val Gly Gly Asp Ser
203 945                    950                    955                    960
205 Val Leu Ala Ala Val Leu Val Glu Glu Met Asn Arg Arg Phe Asp Thr
206                    965                    970                    975
208 Arg Leu Ala Val Thr Asp Leu Phe Lys Tyr Val Asn Ile Arg Asp Met
209          980                    985                    990
211 Ala Arg His Met Glu Gly Ala Thr Ala Gln Ala Arg Thr Gly Ala Thr
212          995                    1000                   1005
```

```
214 Glu Pro Ala Arg Glu Asp Thr Ala Ser Glu Arg Asp Tyr Glu Gly Ser
215    1010                1015                1020
217 Leu Ala Val Ile Gly Ile Ser Cys Gln Leu Pro Gly Ala Ala Asp Pro
218 1025                1030                1035                1040
220 Trp Arg Phe Trp Lys Asn Leu Arg Glu Gly Arg Asp Ser Val Val Ala
221                1045                1050                1055
223 Tyr Arg His Glu Glu Leu Arg Glu Leu Gly Val Pro Glu Glu Val Leu
224            1060                1065                1070
226 Arg Asp Ser Arg Tyr Val Ala Val Arg Ser Ser Ile Glu Asp Lys Glu
227            1075                1080                1085
229 Cys Phe Asp Pro His Phe Phe Gly Leu Thr Ala Arg Asp Ala Ser Phe
230    1090                1095                1100
232 Met Asp Pro Gln Phe Arg Leu Leu Leu Met His Ala Trp Lys Ala Val
233 1105                1110                1115                1120
235 Glu Asp Ala Ala Thr Thr Pro Glu Arg Leu Gly Pro Cys Gly Val Phe
236                1125                1130                1135
238 Met Thr Ala Ser Asn Ser Phe Tyr His Gln Gly Ser Pro Gln Phe Pro
239            1140                1145                1150
241 Ala Asp Gly Gln Pro Val Leu Arg Thr Ala Glu Glu Tyr Val Leu Trp
242            1155                1160                1165
244 Val Leu Ala Gln Ala Gly Ser Ile Pro Thr Met Val Ser Tyr Lys Leu
245    1170                1175                1180
247 Gly Leu Lys Gly Pro Ser Leu Phe Val His Thr Asn Cys Ser Ser Ser
248 1185                1190                1195                1200
250 Leu Ser Ala Leu Tyr Val Ala Gln Gln Ala Ile Ala Ala Gly Asp Cys
251            1205                1210                1215
253 Gln Thr Ala Leu Val Gly Ala Ala Thr Val Phe Pro Ser Ala Asn Leu
254            1220                1225                1230
256 Gly Tyr Leu His Gln Arg Gly Leu Asn Phe Ser Ser Ala Gly Arg Val
257            1235                1240                1245
259 Lys Ala Phe Asp Ala Ala Ala Asp Gly Met Ile Ala Gly Glu Gly Val
260    1250                1255                1260
262 Ala Val Leu Val Val Lys Asp Ala Ala Ala Val Arg Asp Gly Asp
263 1265                1270                1275                1280
265 Pro Ile Tyr Cys Leu Val Arg Lys Val Gly Ile Asn Asn Asp Gly Gln
266            1285                1290                1295
268 Asp Lys Val Gly Leu Tyr Ala Pro Ser Ala Thr Gly Gln Ala Glu Val
269            1300                1305                1310
271 Ile Arg Arg Leu Phe Asp Arg Thr Gly Ile Asp Pro Ala Ser Ile Gly
272            1315                1320                1325
274 Tyr Val Glu Ala His Gly Thr Gly Thr Leu Leu Gly Asp Pro Val Glu
275    1330                1335                1340
277 Val Ser Ala Leu Ser Glu Ala Phe Arg Thr Phe Thr Asp Arg Arg Gly
278 1345                1350                1355                1360
280 Tyr Cys Arg Leu Gly Ser Val Lys Ser Asn Leu Gly His Leu Asp Thr
281                1365                1370                1375
283 Val Ala Gly Leu Ala Gly Leu Ile Lys Thr Ala Leu Ser Leu Arg Gln
284            1380                1385                1390
286 Gly Glu Val Pro Pro Thr Leu His Val Thr Gln Val Asn Pro Lys Leu
```

```
287        1395                1400                1405
289 Glu Leu Thr Asp Ser Pro Phe Val Ile Ala Asp Arg Leu Ala Pro Trp
290    1410                1415                1420
292 Pro Ser Leu Pro Gly Pro Arg Arg Ala Ala Val Ser Ala Phe Gly Leu
293 1425            1430                1435                1440
295 Gly Gly Thr Asn Thr His Ala Ile Leu Glu His Tyr Pro Arg Asp Ser
296            1445                1450                1455
298 Arg Pro Arg Glu Arg Ser Gln Arg Ser Asn Ala Val Arg Ala Val Ala
299            1460                1465                1470
301 Pro Phe Ser Ala Arg Thr Leu Glu Ala Leu Lys Asp Asn Leu Arg Ala
302        1475                1480                1485
304 Leu Leu Asp Phe Leu Glu Asp Pro Ala Ser Ala Glu Val Ala Leu Ala
305    1490                1495                1500
307 Asp Ile Thr Tyr Thr Leu Gln Val Gly Arg Val Ala Met Pro Glu Arg
308 1505            1510                1515                1520
310 Met Val Val Thr Ala Ser Thr Arg Asp Glu Leu Val Glu Gly Leu Arg
311            1525                1530                1535
313 Arg Gly Ile Ala Thr Val Gly Gly Ala His Val Gly Thr Val Val Asp
314            1540                1545                1550
316 Thr Ser Pro Ser Val Asp Ala Asp Ala Arg Ala Val Ala Glu Ala Trp
317        1555                1560                1565
319 Ala Thr Gly Asp Ser Ile Asp Trp Asp Ser Leu His Gly Asp Val Lys
320    1570                1575                1580
322 Pro Ala Arg Val Ser Leu Pro Thr Tyr Gln Phe Ala Lys Glu Arg Tyr
323 1585            1590                1595                1600
325 Gly Leu Ser Pro Ala His Ser Val Ala Asn Ser Ser Lys Thr His Pro
326            1605                1610                1615
328 Asp Ala Gly Val Pro Leu Phe Val Pro Thr Trp Gln Pro Trp Ser Glu
329            1620                1625                1630
331 Gly Ala Ser Asn Ala Ser Leu Ala Leu Arg His Leu Val Val Leu Cys
332        1635                1640                1645
334 Glu Pro Leu Asp Ala Leu Gly Ala Glu Gly Ala Ser Ala Leu Ala Ser
335    1650                1655                1660
337 Thr Leu Ala Asp Arg Arg Ile Glu Val Val Arg Thr Ser Ser Pro Ser
338 1665            1670                1675                1680
340 Ala Arg Leu Asp Ala Arg Phe Met Ala His Ala Ser Ala Val Phe Glu
341            1685                1690                1695
343 Arg Val Lys Ala Leu Leu Ser Glu Arg Leu Thr Ala Pro Val Thr Leu
344    1700                1705                1710
346 Gln Val Leu Val Pro Glu Glu Arg Asp Ala Leu Ala Leu Ser Gly Leu
347    1715                1720                1725
349 Gly Ser Leu Leu Arg Ser Val Ser Gln Glu Asn Pro Leu Val Arg Gly
350    1730                1735                1740
352 Gln Leu Ile Arg Val Gln Gly Ser Val Ser Ala Ser Ala Leu Val Asp
353 1745            1750                1755                1760
355 Val Leu Val Lys Ser Ala Arg Ala Gly Asp Val Thr Asp Ser Arg Tyr
356            1765                1770                1775
358 His Ala Gly Gln Leu Ser Arg Cys Glu Trp Arg Glu Ala Arg Val Ala
359            1780                1785                1790
```

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PATENT APPLICATION: **US/09/710,262E**   TIME: 14:54:55

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L:12 M:270 C: Current Application Number differs, Replaced Current Application Number